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THE UP-TO-DATE HOME

MONEY AND LABOR SAVING APPLIANCES

(*Revised Edition*)

PRICE, 15 CENTS

CHICAGO
506 WEST SIXTY-NINTH STREET
ILLINOIS

NEW ENGLAND KITCHEN OF THE OLDEN TIME

THE UP-TO-DATE HOME

LABOR AND MONEY SAVING APPLIANCES

REVISED EDITION

THE up-to-date home is manifestly one which is managed by an up-to-date home-maker. While the average home today in point of convenience is a great advance over that of our grandmother's time, housekeeping in general is, undeniably, a belated industry. As stated in the preface of the *Library of Home Economics,* "It is realized that the business of housekeeping has not kept pace with the tremendous advancement in other lines of human endeavor, that the wonderful discoveries in science and developments in the arts only slowly and partially have been applied to the problems of personal health and home life." It is the purpose of the home-study courses of this School, which are now embodied in the *Library,* to enable home-makers to become up to date in their own homes. As one of our students expresses it, "Many of us have missed knowing of the great strides that systematized knowledge dealing with home-making has made in the last ten years. Such knowledge is rapidly creeping into schools and colleges, but too late for us—and we don't want to be left behind by school girls."

The books contain about 3,000 pages, and although to get three meals a day and keep things clean seems a simple matter, the new "Profession of Home-Making" is a rather inclusive subject, which cannot well be condensed further without sacrificing completeness. All twelve of the volumes are concerned chiefly with the saving of money and labor, except for the even more important problems of healthful living and the care and training of children. There are other good books—our Circulating Library Department contains over four hundred, but the *Library of Home Economics* is the only attempt to cover the whole subject of up-to-date home-making in a systematic way.

It is the purpose of this Bulletin to describe only a few of the household appliances recently put on the market.

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The point of view is that of the comfortable American home such as is described in Volume I, *The House, Its Plan, Decoration, and Care.* This house would have modern plumbing, lighting, and heating systems, as described in detail in Volume III, *Household Hygiene.*

The house itself is the greatest factor. We do not always realize to what extent the average American home is superior to that of any other country in convenience and in the saving of labor. Even the ordinary kitchen range is by no means common in England, and the high cost of fuel in some European countries makes it necessary to depend upon public ovens to a considerable extent. This, however, may simplify housekeeping, as more food prepared outside the home is used.

THE LIBRARY OF HOME ECONOMICS

The farm home may now have nearly all modern conveniences at moderate expense. Farmers' Bulletin No. 270, *Modern Conveniences for the Farm Home,* gives general estimates of cost of such important conveniences as running water and simple sewerage systems. *The Healthful Farmhouse* tells how an inconvenient farmhouse was converted into a convenient, attractive home at small expense. (Price 60 cents.)

HOUSEHOLD APPLIANCES

The advisability of purchasing certain utensils is discussed in Volume VII, *Household Management,* pages 102-113 and page 195, but it may be well to consider a few general principles here.

Any household appliance should save more time and labor than it takes to adjust it and clean it after use. There is doubtful economy in using a meat grinder in making hash for two. An appliance should be used sufficiently often to save more time and trouble than it gives. A special turkey roaster used only two or three times a year is not a profitable investment; when storage space is limited, its room is worth more than its company. Many utensils and appliances which prove excellent investments in a large family are not so in a small family—the greater the number the greater is the utility of labor-saving appliances. The purchase of any utensil or apparatus should be made to fill a *real want* and not because of the alluring advertisements or fascinating demonstrations. Appliances should simplify, not complicate, but it must be remembered that it usually takes more skill, more brain work, to use any appliance successfully than to continue with old-time methods. The automatic home is not a future possibility.

Household appliances have been invented in nearly all cases by men to *sell.* Many of them are worse than useless, but more are excellent in *their right place.* As time goes on, family living will rely more and more on labor-saving household appliances. The manufacturer and farmer cannot afford to be without the latest and best labor-saving devices. Competition and the high cost of labor forces this condition. Outside household labor is also expensive and hard to obtain, but as there is no money value placed on the housekeeper's time, many women drudge along with no conveniences and broken-down, worn-out appliances. The first expense often prevents the purchase of appliances for the household, but one that is really needed should be considered as an investment. The manufacturer charges the cost of a new machine to "plant" and distributes the expense along a term of years, as interest and depreciation. The same view should be taken of an investment for household appliances. For example, the expense of a washing ma-

chine costing $10.00, which might be expected to last for ten years, should be reckoned as interest on the investment, say 60 cents a year, and 10 per cent for depreciation, or $1.00, so that the yearly cost should be considered $1.60 or 3 cents a week. In whatever way the expense may be considered, a convenience or appliance which saves the homekeeper laborious work or gives time for out-of-door life and recreation is a better investment than doctor's bills and rest cures.

KITCHEN APPLIANCES

The greater part of the work of the household still centers in the kitchen in the preparation of the food and the washing of the dishes.

Fireless Cookers

A Norwegian cooking box is illustrated on page 13 of *Principles of Cookery,* and in the supplement in the same volume, page 152, an extract is given from the consular report which stimulated all the present interest in fireless cooking. Full directions are given also for making and using a fireless cooker.

The principle of operation of these cookers is an old one. It is simply to retain the heat in the food itself and in the water, obtained by the preliminary boiling. Cooking operations use little or no heat in the sense that heat is used in raising the temperature of water or in keeping it boiling, so that if the heat can be prevented from escaping, the changes of cooking will take place without the addition of more heat. As stated on page 13, *Chemistry of the Household,* "Water has a much greater capacity for absorbing heat than any other common substance. For example, one pound of water will absorb ten times as much heat in being raised one degree Fahrenheit as one pound of iron." Elsewhere in this volume and in *Principles of Cookery,* cooking below the boiling point is recommended, especially for tough meat and eggs. Starch begins to cook at 150°-185° F. In the experiments made by Miss Sprague, described in the Bulletin, "A Precise Method of Roasting Beef," it was found that the interior of a "rare" roast reaches only 148° F., and a well done roast 174° F. Consequently it is apparent that nearly all cooking may be done at a less temperature than the boiling point of water, 212° F. Of course it requires the high

temperature of the oven or griddle to produce the flavor and brown crust of bread, cake, and meat. Not everything can be cooked satisfactorily in the old style fireless cook-stove—only the things that are usually cooked *in* water. However, all of the manufacturers now furnish their cookers with metal or soapstone plates which may be heated to a high temperature so that baking and browning of meats, bread and cake can be done satisfactorily.

It is especially important that the vessels used be tightly covered, for water as steam or vapor carries away a large quantity of heat as "latent heat." (See *Chemistry of the Household,* pages 12, 138, and 152.) Naturally, the greater

THE "RAPID" FIRELESS COOKER, PRICE $11.85

quantity of boiling water, the more heat there is to be retained and the longer the heat is kept up to the cooking temperaure. The preliminary boiling must be continued sufficiently long for the food to be heated through, otherwise the cooler interior of the food will reduce the temperature of the water below the cooking point. The time required varies from about five minutes, for small vegetables and grains, to half an hour or longer, for a ham or large piece of meat. It is sometimes advisable to reheat to the boiling temperature, three or four hours after the first heating, when very long cooking is required. If there is considerable water present, foods will remain sufficiently hot for

serving in five to eight hours. When food is left in the cooker over night, it is usually necessary to reheat before serving.

In some experiments made by Miss Bertha M. Terrill on fireless cooking at the University of Chicago, it was found that the gas consumption for the preliminary boiling was as follows:

Oatmeal	2 cups	5 m.	$\frac{1}{5}$ cu. ft.
Beets	6	15 "	1 "
Stew (lamb)	2 lbs.	15 "	1 "
Ham	5 "	30 "	2 "

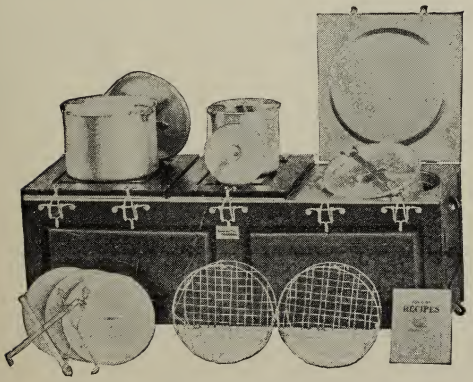
Further experiments showed that the "simmering" temperature could be kept up with a consumption of about 2 cu. ft. of gas per hour. For "just boiling" from 3 to 4 cu. ft. per hour was required. These figures allow an estimate to be made of the saving in fuel by the use of a fireless cooker. For example, the 5 lb. ham cooked entirely on the gas stove would require 2 cu. ft. of gas to heat the water and boil it 30 minutes, and about 6 cu. ft. to boil it slowly for two hours—total 8 cu. ft. Cooked with the aid of the fireless cooker, the gas consumption would be 2 cu. ft., or only one-fourth as much.

To boil the lamb stew 15 minutes and keep it at simmering temperature an hour would require 3 cu. ft. of gas; cooked in the fireless cooker, 1 cu. ft., or one-third. These figures represent the minimum saving, with gas used carefully. In the same series of experiments, it was found that the double burner of the gas stove turned on full consumed gas at about the rate of 30 cu. ft. per hour, and the inner jet at 17 cu. ft. per hour. As the gas is often left turned on full when cooking, the saving in most cases would probably be more than two-thirds or three-fourths.

When using "hot plates" for baking or roasting, it takes from ten to twenty minutes to heat the plates to the required temperature, or from 2 to 4 cu. ft. of gas. This is about half the amount required for similar baking in a small portable oven, and one-fourth or one-fifth of that required for the large oven of an ordinary gas range.

The great advantages of fireless cooking are the saving of time and attention, better results in some cases, prevention of over-cooking and burning, and hot foods ready when

CYLINDER TYPE FIRELESS COOKER



BENCH TYPE FIRELESS COOKER

The "Caloric," Aluminoid Lined with Aluminum Utensils. The aluminum utensils with clamped covers can be purchased separately for home-made cookers.

wanted. The disadvantages are that the cooking has to be started two or three hours before the foods are served, so that more forethought is needed.

There are a great many of these fireless cookers now on the market, as may be noted from the advertisements in the magazines. They give a little better results than home-made cookers, because of better construction, better packing material, and especially adapted utensils. The heat insulating materials now most commonly used are mineral wool or asbestos. Because of their compactness, the factory-made cookers are more convenient than home-made cookers.

The insulation will keep out heat as well as retain it and so the cookers may be used as ice-cream freezers.

Hot Dinner Pail. "Indurated Fiber." Price $3.00

U. S. Fireless Cooker of Indurated Fiber

Of the various styles of factory made fireless cookers the "bench" type with two or three compartments seem to be most popular. Only one cooking utensil is usually placed in each compartment, so that it is easy to get at them. The deep type of fireless cooker, either cylindrical or square, in which one utensil is placed on top of another maintains the heat at cooking temperature a little longer provided it is completely filled, but it is not quite so convenient to use. Of the bench type of cookers, the "Rapid" is an excellent low price cooker. The "Detroit Cooker" is lined with copper and the "Jewel" is lined throughout with aluminum. The "Seely" and the "Republic" are examples of the deep style of cookers.

Practically all the factory made cookers are now lined with metal and are furnished with aluminum utensils. The three compartment cookers cost from $12.00 to $15.00, or $18.00, and to make the purchase of one of them a good investment, it is necessary to use it a good deal, practically every day. If a fireless cooker is used only occasionally, it is best to purchase a one compartment affair costing $6.00 to $8.00, or less.

A number of the cookers on the market are lined with so called "aluminoid." This is simply sheet iron coated with zinc by a special process. The material lasts well if given care, but will rust if not wiped out after using and allowed to dry.

Home-Made Fireless Cookers

A fireless cooker which will save time and fuel may be improvised at home without difficulty. A tight, deep box with cover, or a small trunk, may be used, and for packing, any non-conducting material will serve, such as fine hay, excelsior, feathers, sawdust, or even crumpled newspaper. It is a good plan, as described by Miss Barrows, in *Principles of Cookery,* to use bags or pillow ticks for holding the packing material. There should be at least four inches of packing material on all sides and over and under the pail or kettle.

An excellent cooker may be made very easily from a sugar barrel and excelsior. They have been made in a number of domestic science schools and are used for cooking all hams, tongues, etc., and for making soup stock for the lunch rooms at Chautauqua.

After loosening clean excelsior, pack about eight inches firmly in the bottom of the barrel. Place a fifteen to twenty quart pail in the center and pack excelsior very firmly all around, even with the top. A sack of bed ticking filled with excelsior or other material to place over the top completes the cooker. The excelsior mats so well that the pail may be removed a large number of times and replaced without the necessity of repacking.

The pail should have a tight cover—the tighter the better. One or two shallow dishes with or without covers could be placed in the larger pail, supported by a wire stand, so that

ELECTRIC KITCHEN EQUIPMENT

"Aluminoid"-Covered Kitchen Table and Children's Table; General Electric Co. Cooking Outfit (Cost $95.00); Hoosier Kitchen Cabinet; Bohn Syphon Refrigerator. (Photograph furnished by a member of the A. S. H. E.)

the cooker could be used for several things at the same time. A flour barrel would serve equally well for making a smaller cooker containing a ten or twelve quart pail. One of our students reports making a very successful cooker in a corner of the window box in her kitchen.

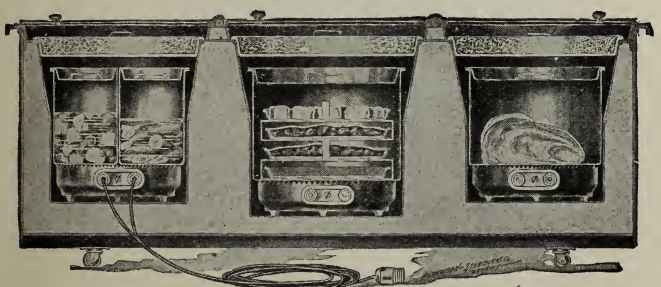
A home-made fireless cooker in which hot plates are to be used should be packed with mineral wool or asbestos, which can usually be obtained from dealers in heating apparatus. Then instead of any lining there should be a metal pail with cover in which to place the hot plates and cooking utensils.

Aluminum utensils for home-made cookers may now be purchased through dealers or direct of the Aluminum Cooking Utensil Company, New Kensington, Pa.

All fireless cookers must be opened for airing and drying after use, otherwise they become musty.

Gas and Electric Fireless Cookers

A considerable advance in the fireless cooking idea is the development of gas and electric stoves with insulated ovens,



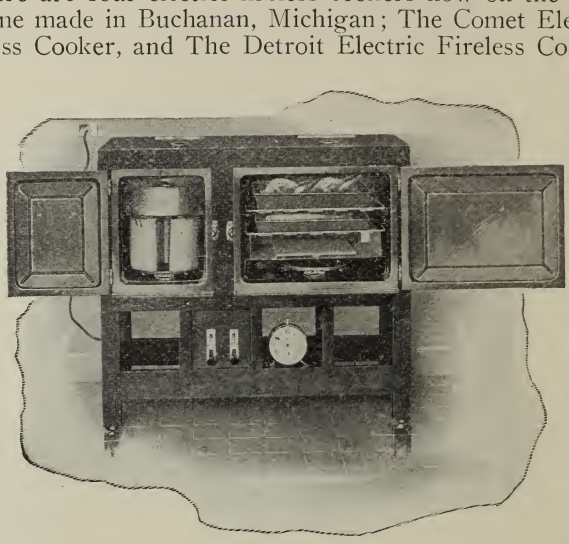
COMET ELECTRIC FIRELESS COOKER
(Price $35.)

so that after the preliminary heating with gas or electricity, the source of heat is cut off and the oven closed up, leaving the food to finish cooking with the stored heat. Thus all the advantages of a regular stove and fireless cooker are combined, and considerable economy of fuel results. Indeed, it looks as if practical electric cooking would come through means of the fireless cooker principle.

The only fireless gas cooker stove which we have found

on the market is The Chambers Fireless Cooker Gas Stove, sold by the Domestic Supply Company, Chicago. All sizes are made, from single oven, which costs $20.00, to gas ranges costing $35.00 to $60.00, also large combinations for hotels containing many ovens.

There are four electric fireless cookers now on the market, one made in Buchanan, Michigan; The Comet Electric Fireless Cooker, and The Detroit Electric Fireless Cooker,



COPEMAN ELECTRIC FIRELESS STOVE. PRICE $75.00

both made in Detroit, and The Copeman, made at Flint, Michigan. All of these electric fireless cookers have an alarm clock arrangement to shut off the electricity after a certain time, depending on what is being cooked. The Detroit Cooker has an arrangement whereby the current is both turned on and turned off automatically. The arrangement of The Copeman is even more complete, for the current may be turned on automatically at any given time, and when the temperature of the oven reaches the desired point, a thermostat in the oven shuts off the current, leaving the food to cook at the proper temperature without further attention. Thus it is possible to start a breakfast in the middle of the night and have it ready in the morning, or to

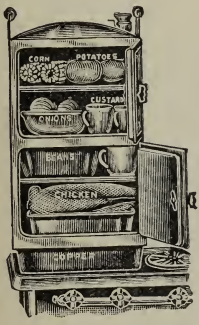
cook the dinner in the afternoon while the housekeeper is away shopping or calling. When she arrives home, all that is necessary is to serve the dinner!

The price of the Copeman is $75.00 and the others from $16.00 to $35.00 or more, depending on the size and number of ovens.

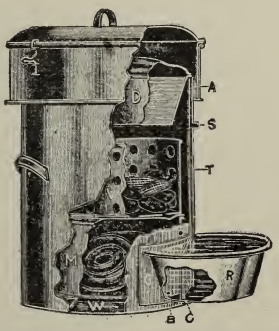
Steam Cookers

A good steam cooker is a useful appliance, especially after one gets into the habit of using it. Both the cylindrical type and the square type with doors are illustrated in *Principles of Cookery*. Tests made with one of the square cookers—the Ideal—showed that fuel economy with gas amounted to about one-third, in comparison to using separate dishes for the things cooked. There would have been a greater saving but for the fact that about one-fifth more time is required to cook by steam than by boiling in water.

A very ingenious appliance is the Culver Steam Cooker. It is of the cylindrical type and has an outside reservior



"IDEAL" STEAM COOKER No. 40. Price $6.65



AUTOMATIC STEAM COOKER, Price $4.50

which contains the reserve water supply, which is fed in automatically as needed. There is a water-sealed cover and the steam passes down an outside tube and bubbles up through the water reservoir in plain sight. As the rate of operation can be seen by the number of bubbles appearing, the gas consumption can be regulated to a nicety. It was found that with a gas consumption of only three feet an hour, the cooker could be operated successfully. The re-

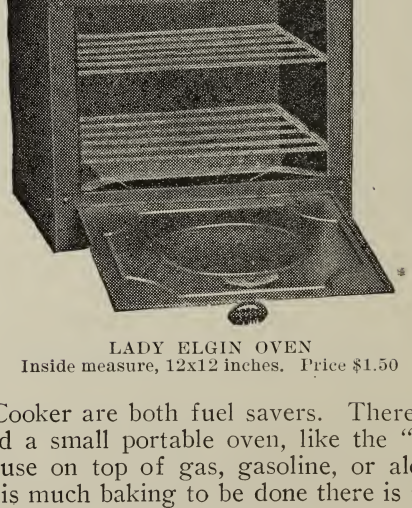
serve supply of water enables this cooker to be run for four or five hours without attention, or even over night, if run very slowly.

Steam cooking is particularly good for sweet-flavored vegetables, tough meat, fish, and so on. The advantages of steam cooking are that there is no danger of burning, fuel economy, and long, thorough cooking. Meats shrink in volume much less than when boiled or roasted. The juices extracted in steaming meat, chicken, and fish make especially delicious broths.

The Buffalo Steam Cereal Cooker is an excellent appliance. It is made in aluminum as well as in tin and has an egg poacher arrangement and other devices.

Small Ovens

Fuel economy is discussed in the supplement of *Principles of Cookery* and the comparative value of fuels is given in *Chemistry of the Household,* page 28. The Fireless Cooker



LADY ELGIN OVEN
Inside measure, 12x12 inches. Price $1.50

and Steam Cooker are both fuel savers. There remains to be mentioned a small portable oven, like the "Lady Elgin Oven," for use on top of gas, gasoline, or alcohol stove. When there is much baking to be done there is no economy

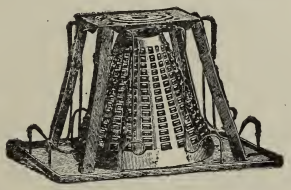
in using such small ovens rather than the large oven of the gas stove, but for baking one or two dishes only, there is considerable fuel economy.

With this small oven the gas consumption for baking pan of muffins was 1 cu. ft. for heating the oven, and 3 cu. ft. for baking twenty minutes. With gas at $1.00 per thousand cu. ft. the cost was 0.4 cents.

The gas consumed in the large oven of the gas stove was 4 cu. ft. for heating the oven, and 7½ cu. ft. for baking twenty minutes. With gas at the same price, the cost was 1.15 cents or nearly three times as much as in the small oven. A chemical thermometer can easily be inserted through the top of these sheet iron ovens and the temperature can be regulated so that the tendencies of these small ovens to burn can be overcome.

Bread Toasters

The saving of gas by using one of the small bread toasters rather than the oven or broiler of the gas stove is consider-



Gas Bread Toaster. Price, 25c.

able, and the toast is more quickly made and better. The coffee may be heated on the top while toasting bread.

PAPER BAG COOKERY

The magazines recently have had a great deal to say about the Soyer method of paper bag cooking, the supposed advantages of which are saving of fuel, saving all dishwashing of baking dishes, no odor of cooking, no shrinkage in weight, and superior results.

From our experience it would seem that some of these claims were hardly justified, and it remains to be proved whether cooking in paper bags is but a passing fad or a new method which may be applied permanently to everyday cooking.

As to saving of fuel, we feel that many of the claims are extravagant. Using the oven for cooking, unless the oven is filled, requires more fuel than cooking on top of the stove in boiling water or in a steamer. Doubtless a little less gas is used when everything is enclosed in paper bags than when left in open dishes, because there is not so much water vapor given off. But the special bags required cost about two cents each, and if, say, four bags are used, the expense for them alone equals the entire expense for heating the oven with gas for two or three hours.

The bags must be thoroughly greased inside before using and should be placed on a rack of fine wire or in a baking dish, and it is a question whether it takes less time or is more agreeable to grease a bag than to wash a baking dish. Nearly all the advantages of the paper bag may be obtained by cooking and serving in covered casseroles. The casserole is usually no harder to wash than the serving dish required when paper bags are used. Indeed, casseroles should be used more than they are at present. With reasonable care they should cost no more in the end than the paper bags.

Cooking in paper bags for some things undoubtedly gives very superior results. The process is a combination of steaming and roasting, and as would naturally be expected, paper bag cookery is especially successful in cooking tough meats, fish and delicate flavored vegetables. The method is interesting and certainly worth trying. Special bags of parchment paper are required. These may be obtained in many places or through the School—one dozen for thirty cents, postpaid. "Soyer's Paper Bag Cooking" may be borrowed of us by *members* for six cents postage. It may be purchased through the School by anyone for sixty cents, postpaid.

The Strandusky Waterless Cooker used on top of the stove gives somewhat the same results as paper bag cookery.

EFFICIENCY IN HEATING WATER WITH GAS

Some very interesting experiments have been made by Professor Judson C. Dickerman, of the University of Wisconsin, on the efficiency in the use of gas for heating water.

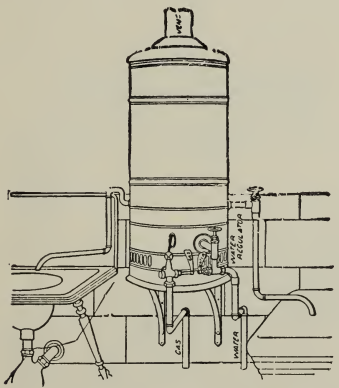
The experiments were made by heating two pounds of water to 200° F. in covered dishes of various sizes and materials and measuring the gas consumed. Knowing the

heat units of the gas and the heat units required to raise the temperature of the water, the percentage of heat taken up by the water was easily calculated. The following are some of the results:

EFFICIENCY IN HEATING WATER

Burner	*Tin Dish* 6½ *in. Diam.*	*Aluminum* 6½ *in. Diam.*	*Blue Enamel* 6¾ *in. Diam.*	*White Enamel* 11 *in. Diam.*
5¼ in. Diam.,	28.2%	30.1%	29.7%	40.5%
3¾ in. Diam.,	34.5%	.....	.....	45.5%
Bunsen Burner,	.....	.....	38.3%	52.0%

In these experiments the gas was burned in the 5¼-inch burner at the rate of 22 feet per hour; in the 3¾-inch



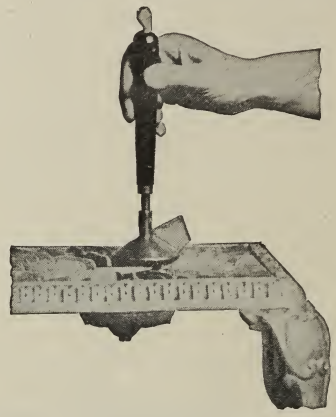
A BATH INSTANTANEOUS HOT WATER HEATER

burner at the rate of 18.5 feet per hour, and in the Bunsen burner at the rate of 16 feet per hour. This was with the gas turned on full (but not with the flame streaming around the sides of the dish). When the flame was turned down about one-half and the water heated more slowly, it was found that the efficiency in all cases was somewhat less.

It is apparent that the material of which the utensil is constructed made very little difference in these experiments. One would suppose that the tin and aluminum dishes would give somewhat higher efficiency than the enameled ware, but this did not seem to be the case. It was found that an old rusty dish, and one that was somewhat coated with the deposit from hard water, gave about the same results as a clean dish. Using a new, bright tin dish, the efficiency was

less than when the bottom became colored by the flame. Leaving off the cover of the dish decreased the efficiency about 10 per cent.

The important factor seemed to be the relation of the



SAFETY GAS LIGHTER. Price $1.00

diameter of the flame to that of the dish—the greater the diameter of the dish in comparison to that of the gas burner the higher the percentage of heat absorbed. This suggests that it costs less to heat the water for dish washing in a covered dish pan than in the tea kettle; that it is more economical to use the small single burners on the gas stove than the wide double burner. It would reduce gas consumption if gas stoves were made with two or three small, straight tube burners like the "simmerer" burner, instead of one. The wide type of burners are used so that the heat will not be concentrated in one spot, which would give a tendency to burn foods, and also that the dish may be placed near the burner. The common type of "mushroom" burners, constructed so as to spread the flame, such as are commonly used in cooking school laboratories, are not as economical as a plain Bunsen burner.

Varying the mixture of gas and air at the burner seems to have little effect on the efficiency.

Other experiments were made in heating water with a bath instantaneous water heater, in which the products of

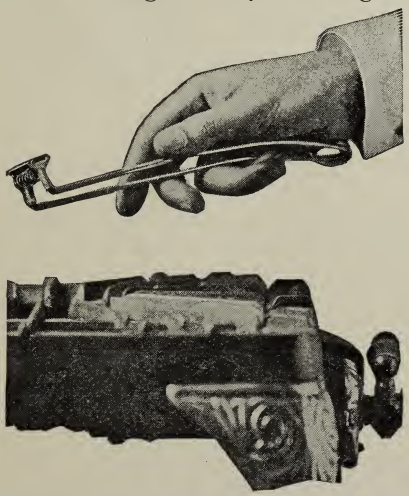
combustion come in contact with the water. It was found that the efficiency was as high as 90 per cent. With this heater there was found to be as much as 2.5 per cent of poisonous carbon monoxide found in the flue gases when the water was run through the heater rapidly, so that such heaters must always be connected with a flue to the outside

The automatic instantaneous gas heaters which furnish hot water all over the house on the turn of the faucet give an efficiency of about 80 per cent.

Tests made on a water heater of the type used in connection with the reservoir for hot water system, gave a heating efficiency of about 65 per cent. This indicates that it is less expensive as well as more convenient to obtain hot water in a special appliance when gas is used.

GAS LIGHTERS

The German chemists have utilized a rather uncommon metal, cereum, in making an alloy, which gives off sparks



SAFETY GAS LIGHTER. Price 25 Cents

very easily when rubbed with a file. The sparks will ignite gas, gasoline or wood alcohol, but nothing else. A good many kinds of cigar lighters have been put on the market and the Safety Gas Lighting Co., of Haverhill, Mass., was

one of the first to utilize this new metal in making a gas lighter for household use. They are very convenient, for all you have to do is to turn on the gas and press the lighter over the burner, when the gas ignites. This saves the danger from having matches around, the nuisance of burnt matches, saves time, and the lighters cost no more than matches.

Various types of lighters are made—the best one costs $1.00; a very satisfactory kind is priced at 25c, and a still cheaper one sells for 15c, all postpaid. The lighting element usually called "flint" wears out after 5,000 to 10,000 applications, but may be renewed at a cost of from 5c to 25c. We have tested this lighter for about a year and would not try to get along without it. A number of imitations have been put on the market which do not give satisfactory service nor last very long.

ALCOHOL AS FUEL

At the time of the passage of the denatured* alcohol bill by Congress great things were predicted of it for use as fuel and in lighting, but at present "industrial alcohol" costs about 65 cents a gallon in small quantities and 50 cents a gallon by the barrel. As alcohol (94 per cent) has only about two-thirds the fuel value of gasoline or kerosene by volume, and as it requires eight to ten gallons of alcohol to equal 1,000 cubic feet of illuminating gas in heating power, it cannot at present be considered an economical fuel.

However, many homes do not have gas. Alcohol is more pleasant to handle and safer than gasoline, so that alcohol stoves may be used to advantage for "light housekeeping." In an article published in Harper's Weekly, October 3, 1908, Mr. Charles Barnard states that all the cooking for a family of three was done with an average of one gallon of alcohol per week. This was with the help of a steam cooker and fireless cooker.

No doubt the price of industrial alcohol will be reduced materially in the course of a few years. It is said to be sold in Germany for as low as 25 cents a gallon. There is an interesting U. S. Department of Agriculture Bulletin on Industrial Alcohol.

*Denatured or industrial alcohol is ordinary grain alcohol rendered unfit for drinking by the addition of about 10% of wood alcohol and ½% benzine.

The one burner alcohol stoves with reservoir cost from $3.50 to $5.00, depending on the finish. They are convenient to use on the breakfast table for making coffee, toast, cooking eggs, and the like. The two burner stoves cost from $7.00 to $10.00. These burn a mixture of alcohol vapor and air, and give a better heating efficiency than a wick burner.

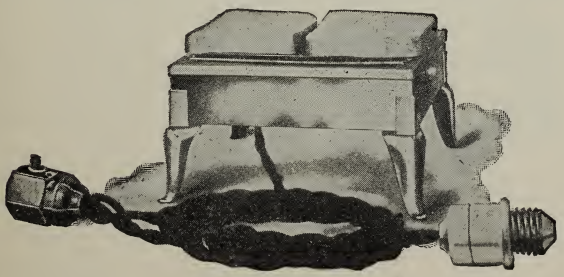
ELECTRIC UTENSILS

Chafing Dish, two heats, taking 220 or 575 watts per hour. Price about $9.00. Coffee Percolator, 300 watts. Price, about $10.00

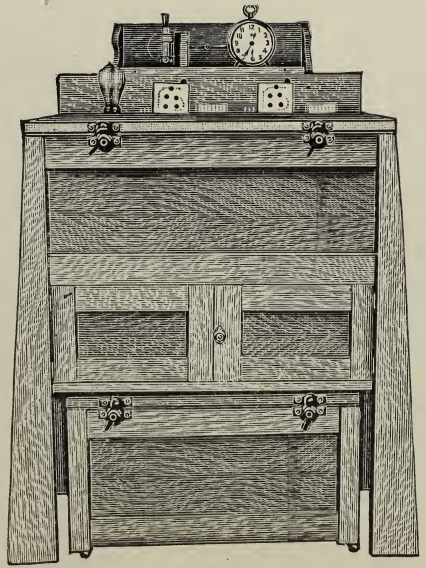
Lamps are now offered for burning alcohol. They have an incandescent mantle and give a brilliant light.

ELECTRIC COOKING

Much can be said of the convenience and cleanliness of electrical cooking. In an increasing number of places a

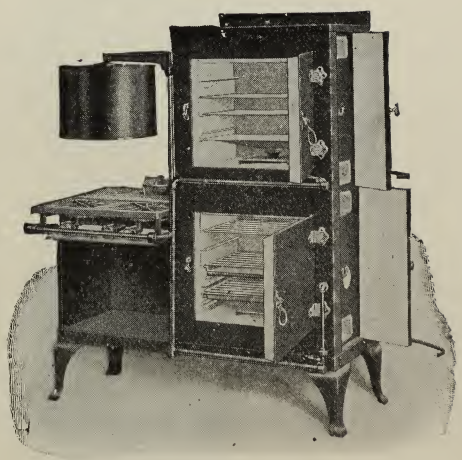


HUGHES TOASTER STOVE. Price $3.75



ELECTRIC FIRELESS STOVE.

Units Heated by Electricity, Automatic Cut-off.

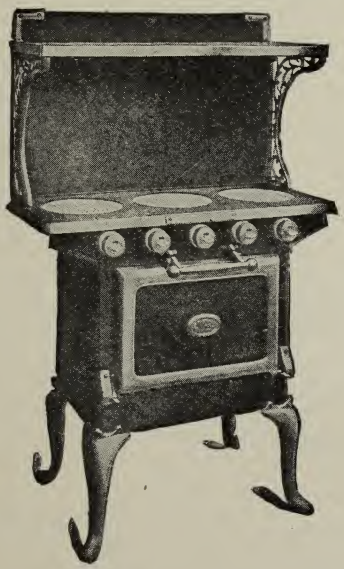


CHAMBERS FIRELESS COOKER GAS RANGE.

Insulated Ovens and Hood.

special low rate is made when the electric current is used for cooking. When the electricity can be obtained for 4 or 5 cents per k. w. (kilowatt = 1,000 watts) the cooking may all be done with electricity at reasonable expense, but even then the expense is somewhat higher than with gas at $1.00 per 1,000 feet, unless an electric fireless cooker is used.

It is not generally known that 17 kilowatts of electric current will yield only as many heat units as 100 cubic feet of gas, so that even with the best of electric appliances and at the lowest rate electricity is an expensive source of heat.



HUGHES THREE BURNER ELECTRIC STOVE AND OVEN

At the higher lighting rate, utensils which are used for a short time only, as the electric toaster, chafing dish or coffee percolator, may be used at small expense.

Electric cooking is coming nearer to being a practical utility year by year. New alloys for the wires of the heating units are being made, which are less liable to burn out than the alloys used at first.

A distinct step in advance are the electric stoves of the

Hughes Electric Heating Company of Chicago. In their stoves the coils of wire are exposed to view, but are sunk in grooves of asbestos-soapstone composition. When the switch is turned the coils of wire become red hot, so that it is easy to see when the current is on. Ordinary cooking utensils may be placed on these "burners" just as on a gas stove. The heat is transmitted both as radiant heat and by conduction. If the coils become damaged, or when they wear out, they may be replaced with new ones costing ten cents each by anyone who can use a screw driver.

As no special utensils need be furnished with the Hughes stoves, the prices are less than for other electric cook stoves, the list prices being from $60.00 for a three burner range with oven and broiler, to $100.00 for a four burner cabinet range with high oven, broiler and warming closet.

They also make a small radiant toaster-stove using 500 watts per hour, for which the price is $3.75, or with a nickel plated griddle to fit the stove and nickel tray, $4.50. This seems to us to be the best value we have found in a small electric stove. It is attractive in appearance, can be attached to any lamp socket, and may be used on the table for cooking anything desired. It makes most superior toast. The legs are detachable, so that the stove is easy to pack for traveling.

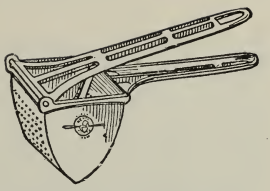
Many electric companies are now making stoves, toasters and other household appliances, among them being the General Electric Company, the Simplex Electric Company, Westinghouse Electric Company, Pacific Electric Company, etc. Electric appliances in most cases may be purchased to good advantage through local electric light companies, as they are interested in increasing the use of current and sometimes sell appliances at about the cost to them.

KITCHEN UTENSILS

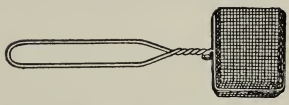
Among the many newer kitchen utensils, two stand prominently of approved value—the bread mixer and food grinder (chopper).

We have tested the Universal Bread Mixer and have a number of favorable reports from our members on this particular make and on others. The general consensus of opinion is that the bread mixer saves time and labor and is

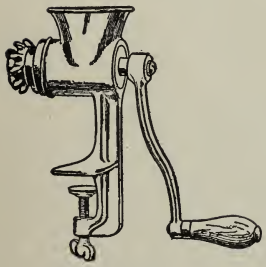
Salt Box



Potato and Vegetable Press

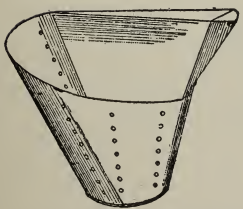


Soap Savers, to utilize scraps

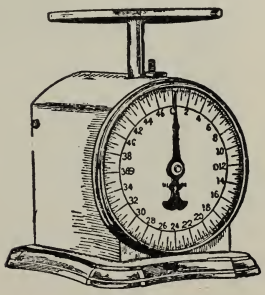


Meat Chopper

Slaw Cutter, knife adjustable to cut fine or coarse.



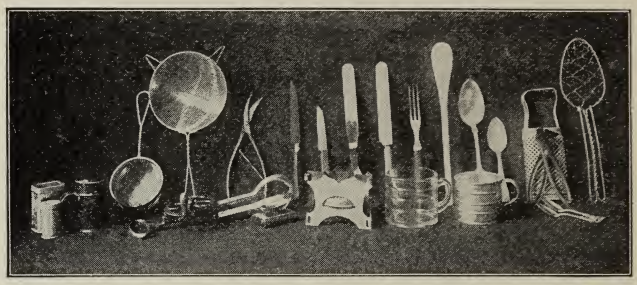
Sink Strainer; keeps garbage from clogging sink and pipes.



Household Scales

A FEW KITCHEN UTENSILS

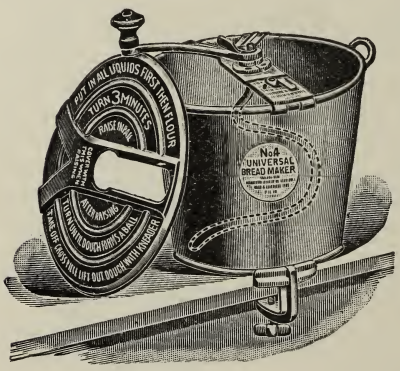
more sanitary, because the hands are kept out of the bread; it is easily cleaned and the results are as good and more



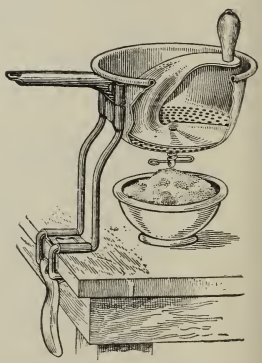
USEFUL COOKING UTENSILS

certain than when the bread is made entirely by hand. If home-made bread is used the greater part of the time, a bread mixer is a good investment.

For some things the food chopper does not give quite as good results as the old-fashioned chopping bowl and chopper, as the food is sometimes crushed rather badly. This is often because the machine is adjusted to make too fine a



UNIVERSAL BREAD MIXER.
No. 4. Price $2.00



"IMPROVED ECONOMY" COLANDER. Price $2.00

cut. There is not much to choose between the various makes, the Universal, Enterprise, Simmons, etc. All are

fairly easily cleaned and have several knives for cutting to different degrees of fineness. The Rollman Manufacturing Co. make a food chopper, the container of which opens, making it especially easy to clean. The "Steinfeld" Chopper contains no knives, but the cutter is adjustable. A food chopper costs $1.00 or less for size sufficiently large for an ordinary family.

The Improved Economy Colander, made by the Utility Sales Co., Davenport, Iowa, is a useful kitchen appliance, especially in the preserving season.

ALUMINUM UTENSILS

Aluminum has many advantages for use in kitchen utensils—it is light in weight, not affected by fruit acids or by

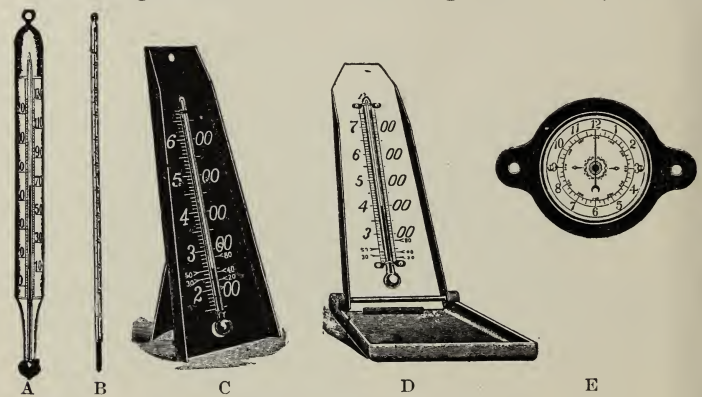
CAST ALUMINUM MUFFIN DISHES
Semi-spherical in shape—easily cleaned

overheating, forms no poisonous salts, and lasts for many years if given ordinary care. As it is a rather soft metal, it should not be scoured with sand soap or other rough materials, but the finer washing powders do not hurt it and the inside of dishes may be cleaned by boiling with weak oxalic acid solution. It is harmed by being boiled with washing or caustic soda.

The price of aluminum utensils has dropped steadily so that those made from sheet aluminum are no more expensive than a good grade of enameled ware and much cheaper in the end. The utensils of cast aluminum cost

somewhat more. The "Wear Ever" brand of aluminum cooking utensils are made of sufficiently heavy material to stand ordinary usage and are entirely satisfactory. If not to be obtained locally, they may be purchased direct of the manufacturers at New Kensington, Pa.

Unfortunately, some of the makers of the cast aluminum utensils, like coffee pots and tea kettles, do not take pains to finish the inside as carefully as they should. While the outside is brilliantly polished, the inside is often rough and difficult to keep clean. This is one great tendency of manufacturers—things are made to sell, and much expense is put on making utensils attractive to the eye, while the use to which the appliance is to be put and ease of cleaning are often lost sight of. Reform will take place the moment there is an intelligent demand for something better. Any "town



COOKING THERMOMETERS

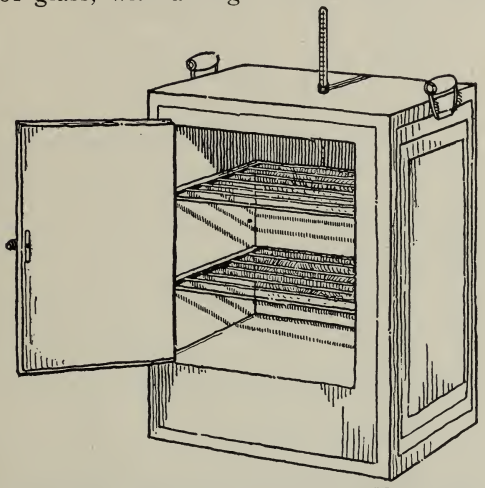
A, Floating Thermometer; B, Chemical; C, Oven (Price, $1.00); D, Oven, folding into base (Price, $2.00); E, Oven Door "Thermostat"

dump" gives eloquent testimony of the amount of money wasted in poor cooking utensils.

THERMOMETERS

The use of thermometers in cooking is spoken of in a number of the lessons, and one of our bulletins states that a thermometer registering to 280° F. can be furnished by the School for 50 cents and a chemical thermometer registering to 600° or 700° F. for $1.50. The 50 cent thermometer

is similar to a dairy or bath thermometer, that is, made entirely of glass, with a large hollow stem so that it will



THE MOST ACCURATE OVEN THERMOMETER

float in water. The degrees are marked on a paper scale inside the tube. This style of thermometer is not sufficiently accurate for exact scientific work, but is near enough to being correct for use in pasteurizing milk, taking the temperature of bread dough, candy making, and rough experimental work. They will stand fairly rough usage. This style of thermometer can be furnished marked with both Centigrade and Fahrenheit scale at the same price—50 cents, but these register only to 240° F. A regular candy thermometer in a metal case costs $1.25.

The chemical thermometers have a solid stem with the degrees engraved in the glass. They are accurate, but must be treated with some care.

There is also an oven thermometer registering to 600° F. on a small metal stand. It is made to stand or hang inside the oven, and so can be seen only when the oven door is open.

The up-to-date gas or coal range has a heat indicator in the oven door. Some of these do not work well; others are fairly accurate. A good oven "thermostat" registering de-

grees on the dial costs about $1.50. If no place has been left in the oven door for a thermostat, it will cost perhaps $2.00 more to have it put in and adjusted.

The oven thermometer permitting of most accurate work is that of the illustration, taken from *Principles of Cookery*. A small hole is punched or drilled in the top of the portable oven, the chemical thermometer registering to 600° or 700° F. is wrapped with a little sheet asbestos and wire, and inserted in the hole. The mercury bulb should extend about two inches into the oven. As the stem is outside the oven, the temperature inside can be told at all times.

The same arrangement can be made in the oven of a gas range when the oven is above the top of the stove, and even if it is below, though in this case, the stem of the thermometer extends up through the burners and so is more liable to get broken. If the hole for the thermometer is made by a stove man or machinist, it would be best to have a short tube put in the hole with the edges bent over into a flange, to keep it in place.

While it is true that the experienced cook knows when the oven is "about right" for baking various dishes, even he sometimes does not have "good luck." The up-to-date cook needs to eliminate luck. Given the same materials and the same conditions, results will always be the same. The use of thermometers in cookery is a step in the direction of truly scientific cooking.

We have endeavored to find the temperatures which teachers of cookery recommend. Conditions vary so much that it is difficult to give definite figures. The temperature registered at the oven door will be less than that given by a thermometer in the top of the oven, and this less than the temperature of the lower part of the oven. Again, the size of the roast and the size and shape of the dish make a difference in the correct temperature to be used. All foods are poor conductors of heat and it requires considerable time for the heat to penetrate, so that lower temperatures must be used for large roasts and dishes than for small quantities, to avoid burning the outside before the interior is done.

The following temperatures are taken from various sources:

OVEN TEMPERATURES

	Enter at	*Keep at*
Roast Beef	480° F.	375° F.
Fish	520	390
Bread	410	375
	From teachers.	
Roasting Meat	480° F.	350° F.
Bread	400	400
Popovers	480	470
Muffins, Cookies, Puff Pastry	450	450
Plain Cake	380	380
" "	400	400
Sponge Cake	350	350
" "	300	Increase, then lower.
Baked Custard	350	(In water—higher).

FRYING — TEMPERATURE OF THE FAT.

Doughs — uncooked food	340° F.
Croquettes—cooked food	360

These temperatures are higher than those used in large ovens.

The boiling point of the syrup in candy making has been accurately determined by candy makers. The article on Candy Making in our new course *Lessons in Cooking,* Part IV (price 50 cents), gives the following temperatures: "Soft Ball"—fondant, etc., 238° F.; "Hard Ball"—caramels, etc., 254° F.; "Crack"—taffies, etc., 260°-275° F.; "Hard Crack"—peanut candy, etc., 290° F.

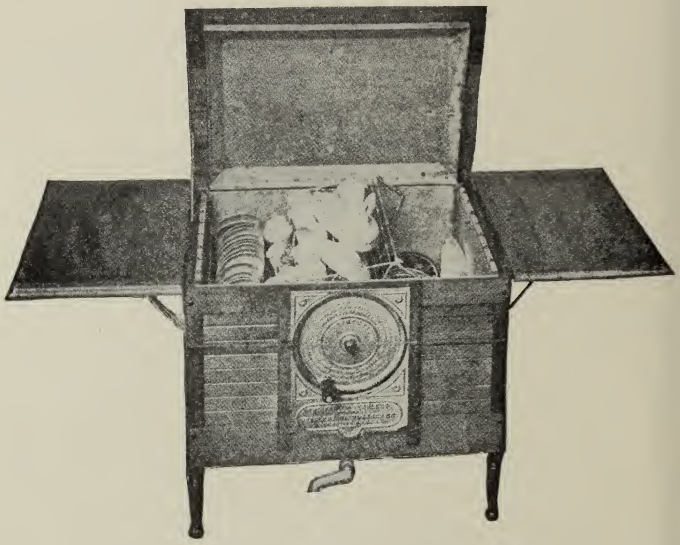
Miss Snow at the University of Chicago has made some careful experiments on the best boiling point of the syrups in jelly making. This was found to be from 103½° to 104½° C. (219°-220° F.). A tested thermometer must be used, as a small variation makes a good deal of difference here, while a few degrees one way or the other in baking does not affect the results.

DISHWASHING MACHINES

If there is one task more than another on which housekeepers would like relief, it is dishwashing. Dishwashing machines for hotels and large establishments are spoken of and illustrated in *Chemistry of the Household.* We have only found three machines now on the market for household use.

These are the Mound City Dishwasher, price, $4.50, which is a circular galvanized iron can with cover, contain-

ing a circular rack in which the dishes are placed to be washed. This is rotated through hot soapy water by a crank on the top of the machine. The tray is then lifted and the dishes rinsed with hot water. It works only fairly well. The water for the dishwashing may be heated directly in the can placed on top of the stove. This dishwasher is not attractive in appearance and would be improved by a coat of aluminum enamel.



FEARLESS DISHWASHING MACHINE. (Price $30.)

The Sanitary Dishwasher made by the National Machine and Stamping Company of Detroit sells for $15.00. It is not a well finished machine, and we have found the manufacturers most unsatisfactory in their business dealings, so do not recommend the machine.

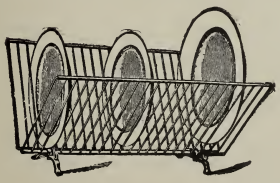
There remains the Fearless Dishwashing Machine made in Rochester. This machine is just about the size of the kitchen table and may take its place. The machine seems to be well planned and well made in every way. The dishes are held in well arranged racks and provision is made for washing cutlery, cups, pitchers, etc. The dishes may be

washed after every meal, but in a small family once a day is sufficient. Four quarts of hot water with sufficient dissolved soap in it will do the washing. The crank is turned first in one direction and then in the other, which sprays the dishes on all sides. This is kept up for about two minutes, when the spout is turned down, and when the wash water is drained out, the first rinse water is put in and the crank turned a few times. This is drained and more hot water added. Then the cover is left up and the dishes dry in a short time. White soap containing no resin should be used to obtain shining dishes.

The price of the machine, including drip pan and dipper, is $30.00, with freight charges from Rochester extra. The manufacturers are not pushing the sale of the machine actively because there is so great a demand for their hotel machine and but little demand for a family machine.

The A. S. H. E. Dish Washer

Not being able to find an entirely satisfactory dishwasher at small price, we combined the several ideas found in *Chemistry of the Household* and devised one of our own. It has been used for over two years and proved to be a success. It saves time, saves washing dish towels, keeps the hands out of the water, takes up no extra room, is no trouble to keep clean, and costs only $1.50, express prepaid. Two dish pans are required.



Folding Dish Drain

Frying Basket 14 in. in diameter

We first used the method recommended in *Chemistry of the Household* of having one dish pan for washing and a second pan for rinsing. It was found a most uncomfortable job to fish out the dishes from the hot rinsing water, so we set about finding something to do this. Finally we found at a department store a large-sized wire basket for frying croquettes, which cost 45 cents, and a long-handled fiber brush costing 15 cents.

Having the dishes carefully scraped or rinsed, the two dish pans two-thirds full of very hot water, and a liberal supply of soap in the washing water, the method is as follows: Place the wire basket in the washing pan and wash each dish with the brush as it goes into the water and basket; continue till all the dishes of a size are washed and in the basket; lift the basket containing the dishes out of the water by the handle, tip a little to drain; put all into the rinsing water for a moment; lift by the handle; tip to drain a second; then place the dishes on the dish drainer. If plenty of soap has been used in the wash water and the water in both pans is *steaming hot,* the dishes will drain perfectly dry and require no wiping whatever, except perhaps a touch of the towel if there happens to be a drop of water on the edge of a dish.

The dishes must be washed clean, for a greasy dish will not drain well. It is best to wipe the silver and glasses with a towel. China having decorations in gilt will not bear very hot water or much soap, and should not be washed as described.

The folding dish drainer illustrated, which keeps the dishes apart, must be used to obtain good results in draining. As this and the large wire basket, as well as the fiber brushes, are rather difficult to obtain, we have purchased a supply and will furnish the complete dish washer, consisting of wire basket, folding drainer and two fiber brushes, for $1.50, express prepaid east of the Rocky Mountains and north of Tennessee. The express charges are 50 cents additional to points beyond. A good square pattern soap shaker will be included for 10 cents additional and a pot scraper and chain for 10 cents more.

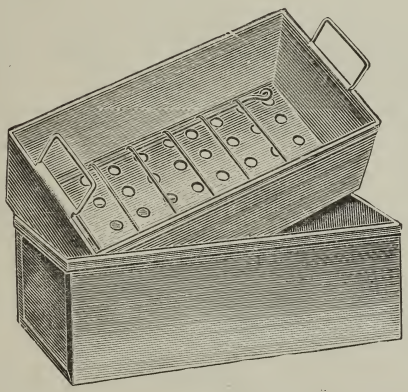
Part III of our new course, *Lessons in Cooking, Through Preparation of Meals,* contains a most excellent article on dishwashing. The price for the single Part is 50 cents.

The Dennison Manufacturing Company have recently put on the market a line of paper plates excellent in appearance and not expensive. They may be used to good advantage at many times and so save dishwashing.

SILVER CLEANING

The Ramsay-Vance Silver-Clean Pan saves much time and labor in polishing silver or silver plate. The kind illus-

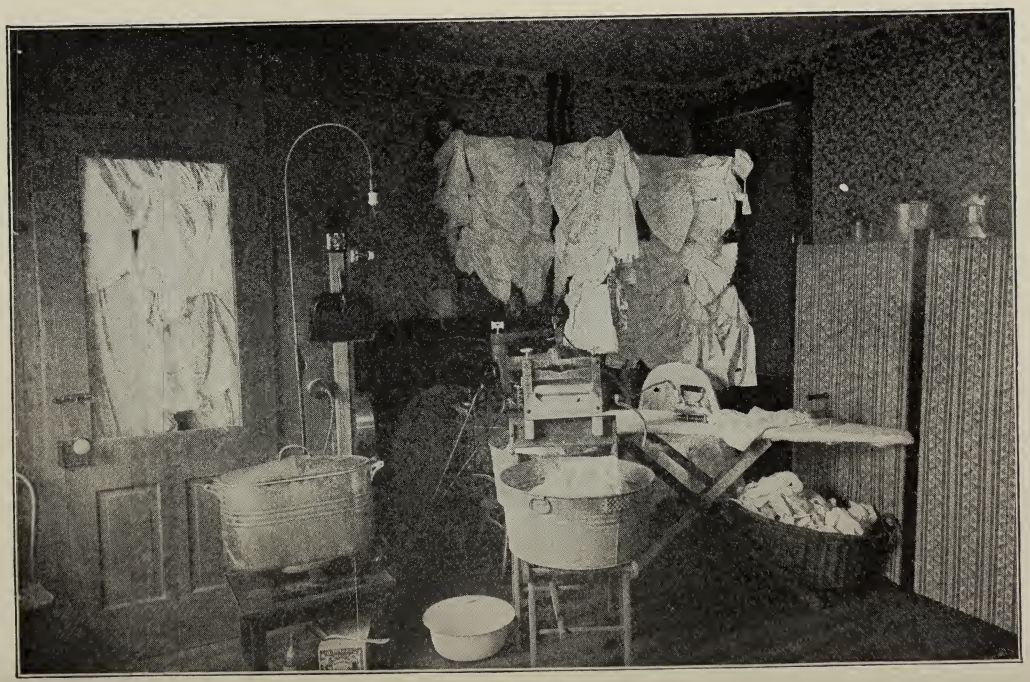
rated consists of two zinc pans, one of which is perforated and fits inside the other. The inside pan has wire rack on the bottom, which is supposed to help in the operation. The household silver is placed in the pan with a solution of baking soda and common salt in hot water. In a few minutes all the tarnish has disappeared from knives, forks and spoons, and the inner pan is lifted, rinsed with clear water,



RAMSAY-VANCE SILVER-CLEAN PAN. Price $2.00

and the silver dried as usual. The action is an electro-chemical one between the silver and the zinc in which a very little hydrogen is produced. This changes the oxides and sulphides of silver, of which the tarnish is composed, into silver. When first taken out the metal has a slight frosted appearance; this disappears when the silver is wiped with a soft cloth or chamois, and the silver comes out beautifully bright and shiny. The action is entirely harmless to the silver, and in fact has less effect than ordinary polishing. The price for the double pan is $2.00, and of a single one $1.25. Larger sizes are made for hotels or institutions.

About the same results can be obtained by using an aluminum pan, or scraps of sheet zinc may be used in agate ware dish. One tablespoon of baking soda and one of salt are used to a quart of water.



AN ELECTRIC LAUNDRY.

LAUNDRY APPLIANCES

The next home industry which will be relegated to the factory, in the city at least, is doubtless the laundry work. Even now the flat work—bedding, towels, table linen—can be done more cheaply in the public laundries than at home. Rates are made as low as $1.00 per 100 pieces. Some discrimination must be exercised in selecting a laundryman. Not *all* laundries use caustic alkali and bleaching powder. It is a good idea to visit one's laundry. Some laundries make a low rate on "rough dry" work, charging by the pound.

The "Wet Wash"

One of our students living near Boston has written us the following account of the "wet wash" laundry: "The whole family wash is collected in a strong box which holds about a bushel and a half of clothing. The box may be packed as tightly as possible. At the laundry, the clothing is sorted into white clothes, colored clothing, and flannels. The white clothing of each family is put into a compartment of a washing machine in which all-white clothing is being washed. The same is done with the colorod clothing. The flannels are sometimes washed by hand and sometimes by machinery. In one laundry visited, the clothing was washed in seven different waters, beginning with soapy water and going on to rinsing and bluing waters. When the clothing is taken out of the compartment, it is put into bags and the bags into the centrifugal extractor, which in revolving rapidly throws out the water. The clothes are shaken out and delivered damp, in proper condition for immediate ironing. Some prefer to hang the clothes out on a line and dry them in the air, afterwards dampening for ironing as usual."

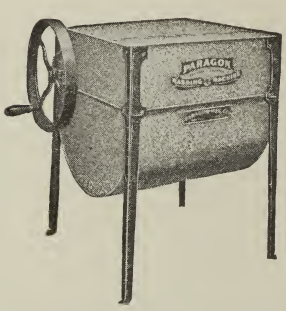
The most attractive part of the arrangement is the price—50 *cents for the whole family washing.* We have not heard of the "wet wash" laundry in any other part of the country. No laundry in Chicago makes such an arrangement. Ask your laundryman about it.

If time and money are an object, a considerable saving of both may be effected by leaving many things unironed—as Turkish towels, knit underwear, stockings, cotton flannel night gowns, children's bibs, napkins and handkerchiefs, sheets even, and counterpanes.

WASHING MACHINES

Recently a magazine which has a large country circulation in the Middle West sent out a question sheet to their subscribers. Among other things was asked if the subscriber used a washing machine, and the make. Of 8,000 who replied, over half reported the use of some washing machine; there were 214 different kinds mentioned. This would indicate that washing machines are used quite generally in the country and that there was no lack of variety.

A dozen or more different kinds of washing machines may be seen in any department store, and usually hardware

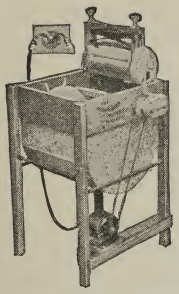


PARAGON HAND WASHING MACHINE

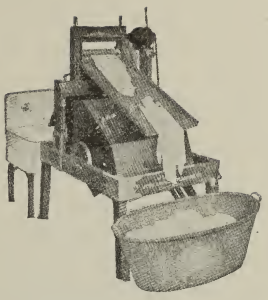
"SYRACUSE EASY" WASHING MACHINE

and general merchandise stores have two or three kinds on sale.

The most common type is the "rotary" washer—a wooden tub on legs with the bottom larger than the top. The bottom and sides are corrugated. There is a shaft in the center, at the bottom of which is a wooden disc with four prongs—the so-called "milk-stool" arrangement. This presses against the clothes, and by the mechanism on top is twisted half way or more around in one direction, then reversed and turned the other way. The clothes move at the same time and rub against the corrugated bottom and sides. When the motion is reversed, the water has a tendency to force through the clothes.



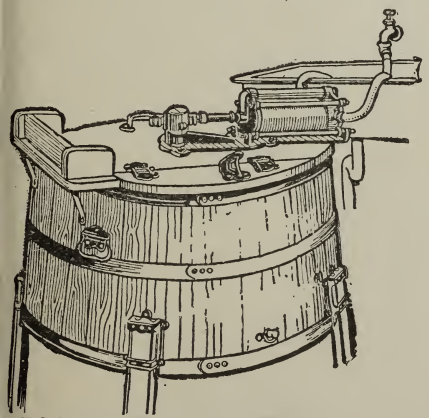
Rochester Electric Cylinder Washer.



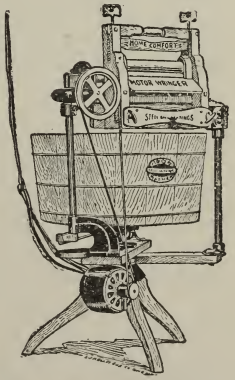
Judd Oscillating Electric Washer

The mechanism for making this twisting motion and the reverse constitutes the variety in this type of washing machine, the most common method being by means of a crank on a flywheel. This type of machine costs from $4.50 to $8.00.

The "Syracuse Easy" machine is an adaptation of the old-fashioned pounding barrel for washing clothes. There is a cone-shaped plunger which is moved up and down in the galvanized iron tub, and so forces and draws the water through the clothes.



ROTARY TYPE OF WASHER
Piston Water Motor Attached



"1900" WASHER, Electrically Driven.

Another manufactures a cone-shaped arrangement on the end of a stick. It keeps the hands out of the water and is used in any wash tub or pail. It costs $2.50 made entirely of copper.

Then there is the type of machine half cylinder in shape, with a rocking motion of the half circle framework of slats which rubs and squeezes the clothes.

The steam laundries use cylinder machines, one cylinder inside the other, the inside cylinder being perforated or being made of slats of wood. The revolving of the inside cylinder lifts the clothes up and drops them back into the hot, soapy water. There are a number of different makes of household machines made on this principle. They cost $10.00 or $12.00.

Running a hand machine is a good deal easier than scrubbing on a washboard; moreover, boy or man power may be used.

A number of washing machines are made to run by power. The simplest arrangement is a piston water motor which gives simply a forward and back motion and is applied directly to the rotary type of washers. These motors require at least 25 pounds of water pressure to operate them successfully. The motor is attached to the water faucet by a length of hose. One make is stated to use 240 gallons of water per hour. The motor alone costs about $12.00, and with the whole washing machine, from $15.00 to $18.00.

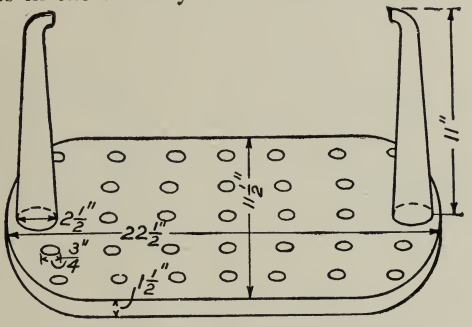
A number of manufacturers supply washing machines operated by an electric motor. The clothes wringer is also attached so that the clothes may be both washed and wrung by the machine. The "1900 Washer," electrically operated with wringer, costs $54.00 furnished with direct current motor, and $60.00 with alternating current motor. The "Paragon" cylinder washer with electric motor for washing and wringing complete costs $90.00. The "Paragon" machine is made in larger size for hotels and institutions.

Another make of cylinder washers is the Rochester, for which the price with electric motor and wringer is $57.50. Still another make is the Thor Electric, which sells from $85.00 to $125.00.

The Judd machine is of still another type. It oscillates back and forth quite rapidly and does very thorough and

ıick work. It is copper lined and covered, and the price $125.00. The wringer may be operated while a new arge of clothes is being washed.

We have tested a hand cylinder machine for two years ıd find that it does excellent work. More intelligence is quired to use a washing machine successfully than to scrub e clothes in the old way on a washboard.



A MECHANICAL WASHING DEVICE

Made to fit in the bottom of a wash boiler. The formation of steam forces the hot, soapy water up the spouts, over and through the clothes.

The method for washing white clothes with the kerosene · paraffine boil, is described in *Chemistry of the Household*, age 130. A sketch of the apparatus illustrated was given s by Professor Sheppard, of the University of Minnesota, uthor of *Laundry Work*. It fits in the bottom of the wash oiler and the formation of steam forces the water up the ›outs, over and through the clothes. We have not had the pparatus made. A tinsmith stated that it would cost about 2.50 to make the apparatus.

IRONING

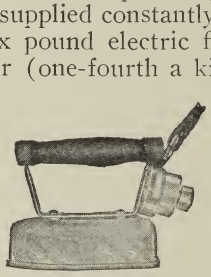
The old-fashioned flat iron with attached handle is grad- ally giving way to the "Potts" iron with detachable wooden andle. These are heated on the stove or over the gas flame, ke the older style flat iron. It is often convenient to have small one-burner gas stove which may be placed at the ide of the ironing table or ironing board.

There are on the market a number of iron heaters for overing irons and thus saving heat. Even an old tin dish laced over the irons will save much heat.

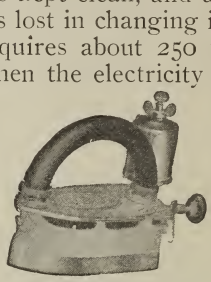
Electric Irons

More electric heated flat irons are used than any other electric household appliance. Those using them are very enthusiastic in their praise. The ironing can be done in about half the time ordinarily required. As in all self-heated irons, the polishing surface is kept clean, and as the heat is supplied constantly, no time is lost in changing irons.

A six pound electric flat iron requires about 250 watts an hour (one-fourth a kilowatt) when the electricity is on



"Deleco" Three Heat Electric Iron.



"Imperial" Gasoline or Alcohol Iron. Price $4.00

all the time. In ironing delicate pieces it is necessary to shut off the current to prevent the iron growing too hot. The "Deleco" electric iron has three heats, which is a convenience. It costs $7.00.

One of our members reports that the use of the electric iron adds about $1.50 per month to the electric light bill and saves about 75 cents on the gas bill. This is in a family of five including two small children, with electricity at 13 cents a kilowatt hour, all the laundry work done at home.

Gasoline and Alcohol Irons

The advantage of the gasoline and alcohol self-heated iron is somewhat the same as the electric iron—no time is lost in changing irons. The heat can be regulated, so that ironing can be done very rapidly and on the back porch or anywhere that it is convenient or agreeable. We have tested the "Imperial" gasoline and alcohol iron and find that it does excellent and rapid work. On a rough test, the cost of fuel with gasoline at 16 cents a gallon is about half that for accomplishing the same work with flat irons heated on the gas stove—gas at $1.00 per 1,000 cubic feet. It requires about five minutes to heat up the gas generating apparatus. The "Imperial" iron is fitted so that either gasoline or alcohol may be used by changing the orifice. We do not

think the gasoline or alcohol iron is dangerous in *intelligent hands.*

Alcohol irons work on the same principle as the gasoline iron, though they have a differently constructed burner, because the alcohol must be burned more rapidly than gasoline to keep up the required temperature. The generator must be heated hotter to burn alcohol, so it takes a little longer to start an alcohol iron. An iron will burn a pint of alcohol in three to four hours and so costs two or three cents an hour to operate. The small alcohol irons for pressing are convenient for small work.

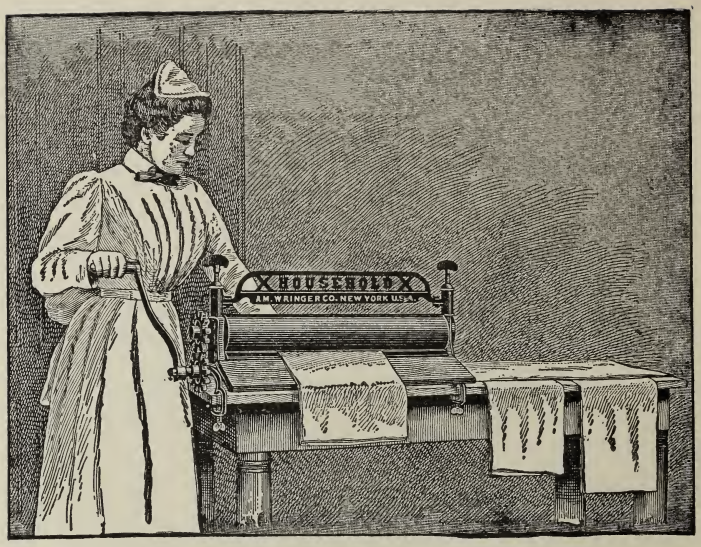
Gas Irons

Large-size, self-heated gas irons are very commonly used by tailors for pressing, but not often used as they should be for the family ironing. If a light weight rubber tube is used for supplying the gas, it is about as convenient as and much less expensive to run than an electric iron. One kind is made with two polishing surfaces and arranged to turn, so that first one and then the other side may be used. The price of these is $4.00—other kinds cost only $2.00 or $1.50. A gas iron uses much less gas than is required to heat irons over a burner.

Mangles

The reason that flat work is so much cheaper than fancy

GAS HEATED MANGLE



A COLD MANGLE
Price, $6.75

laundry is that the ironing is done on the ironing machine or mangle, usually a hot mangle.

If the laundry work is not sent out, a mangle is a good investment for a large household, boarding house, or institution.

The cold mangles cost less than the gas heated mangles. The damp clothes are folded and passed through the rolls of the mangle under considerable pressure, once through for every fold. With a cold mangle the flat work must be dried afterwards. This is a slow process. We have known of napkins being furnished to the guests in hotels and boarding houses before they were quite dry! It is stated that the cold mangle is easier on the cloth than the hot mangle or ironing.

The hot mangles are heated either by gas, gasoline, or electricity. The clothes are finished as dry as in ordinary ironing, and in very much less time. Particularly good work can be done on table linen with a hot mangle, provided care is used.

One disadvantage of the mangle, hot or cold, is that it takes two persons to operate the hand machine successfully. The large machines are run by power.

A DRY ROOM

A very great convenience, especially in the winter, is a dry room near the laundry, which makes the laundry work independent of rainy days and saves dangerous exposure in cold weather. This is easily arranged for in a new house, or sometimes in an old one. If furnace heat is available, one of the hot air pipes may be turned into the room. Provision must be made for an outlet, preferably near the bottom of the room. If steam or hot water system is used, a radiator can be placed in the dry room.

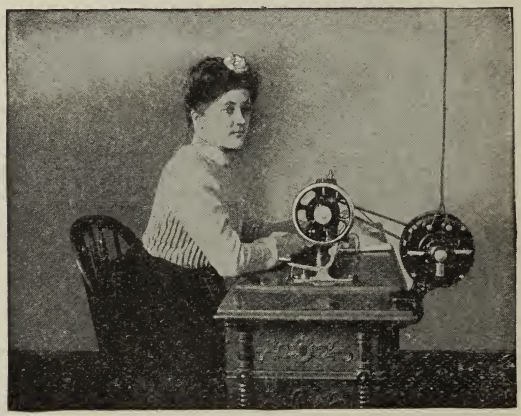
O. K. CLOTHES DRYER. Price $5.00

Complete dry rooms are now on the market. That made by the Hill Dryer Company contains sections which draw out for hanging or taking off the clothes. It is heated by a special gas laundry stove or otherwise. The price is $85.00 to $125.00.

A much simpler and less expensive arrangement is the O. K. Clothes Dryer, made in Bristol, Vermont. This is simply a rack which may be easily attached to the ceiling of the kitchen or laundry. It has pulley arrangements for lowering the rack for filling, when it is raised up close to the ceiling, where the clothes dry quickly in the warm air. The price is $5.00, express prepaid.

POWER IN THE HOME

The up-to-date home should have some sort of mechanical power available. When the house is wired for electricity, the small electric motors can be applied to all sorts of mechanical operations, and the power taken from any



SEWING MACHINE MOTOR AND ATTACHMENTS

electric light socket. The first cost of an electric motor is considerable, but the electric current for power is cheap and easily controlled. It only requires about the same amount of electric current to operate a 1/25 horse-power motor as for a 16 candle-power incandescent lamp, i. e., 50 watts per hour.

An electric motor applied to the sewing machine is a very great help, especially if much sewing is done. A 1/25 horse-power motor and attachment can be put on for about $10.00 with direct current, and $12.00 with alternating current.

The motor is started, stopped, and the speed regulated, by a touch of the foot on the treadle.

A 1/10 horse-power motor for running a washing machine and the like costs about $25.00. It will use about 60 watts per hour. The local electric light company will give more definite figures.

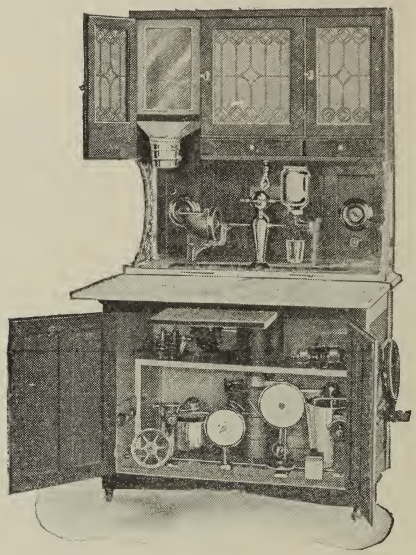
A motor with silver polishing buffer and grinding wheels costs $12.00. The electric fans are, of course, quite com-

STEINER ELECTRIC MOTOR AND STAND CONNECTED TO WASHER AND WRINGER. Price, Complete, $65.00

monly used. There seems no reason why the buffing wheel might not replace the fan of the fan motor.

A very ingenious combination is offered by the Steiner Manufacturing Company of St. Louis. Their family motor alone with switches, cord and plug, costs $35.00, but they have all sorts of attachments at reasonable prices—sewing machine $3.75, buffing wheel 30 cents, emery wheel 40 cents,

ice cream freezer $3.00, coffee and spice mill $5.00, meat grinder $1.25, bread mixer $2.00, gas heated mangle $25.00, adjustable stand $5.50, washing machine $10.00, wringer $5.50. The one motor fits on all appliances and can be used on them successively.



FEDERAL ELECTRIC KITCHEN CABINET

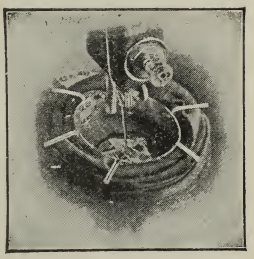
The Westinghouse Company is advertising a family motor, for which the price is $20.00 up. They have sewing machine attachment for $2.75, emery wheel for 40 cents, buffing wheel for 20 cents, blower for $12.50.

The electric kitchen cabinet made by the Federal Electric Company, Chicago, is the most complete arrangement we have seen. The meat chopper, coffee grinder, bread mixer, and various other appliances are fitted on the top of the cabinet and stored away underneath when not in use. The cabinet and appliances are very finely finished, but the price is $175.00, which perhaps is not so high when all the appliances furnished are considered, though it seems considerable as a lump sum.

The rotary water motors are less expensive than electric motors, but they cannot be operated successfully unless the water pressure is at least 35 pounds per sq. inch. If the water is metered, the cost of running is usually higher than for an electric motor of the same power. A small water motor with polishing and grinding wheels costs $3.00, and a larger one for a washing machine, $5.00.

A STOCKING DARNER

The sewing machine manufacturers supply more appliances for the sewing machine than are generally used. Mrs. Maynard has invented one that reduces the labor of darning.



THE DORCAS SEWING MACHINE DARNER

Darning table cloths and the like on a sewing machine with the help of an embroidery hoop is spoken of in *Textile and Clothing*, page 158. The Dorcas Darner carries this quick method of repair a step further by enabling one to darn stockings on the sewing machine. The darner is simply a metal ring with hooks on one edge and wires on the other. The darner is placed in the stocking with the hole in the center of the darner, the material caught on the hooks, so as to keep the goods tight around the hole, and the remainder of the stocking is held out of the way by the wires.

A double-thread sewing machine must be used. The presser-foot is taken off, the machine is threaded with fine thread, No. 120, the darner with the stocking is placed under the needle, and stitching is done, backward and forward across the hole. A large hole can be darned very quickly in this way on the machine and much time saved. Moreover, stockings so far gone that it would be a foolish waste of time to try to darn them by hand can be kept in commission with the help of the Dorcas Darner and the machine. The darner is too large to be used well in the toes of thick stockings of small children. The price is 55 cents postpaid.

The Singer Sewing Machine Co. makes a machine stocking darner similar in principal to the Dorcas, which has some advantage over it. The price is 75 cents.

THE SERVANTLESS HOUSEHOLD

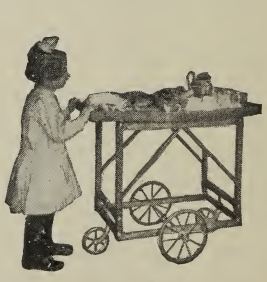
From the present outlook it looks as if the domestic ser-

REVOLVING TABLE SERVER

vant problem would have to be solved through wider use of labor-saving appliances in the household.

Mrs. Frank A. Pattison while President of the New Jersey Federation of Women's Clubs reduced her household

Wheel Tray



Home-Made Wheel Tray

to a servantless condition through the employment of household appliances. The very interesting story is told in the August 1911 issue of Success Magazine. Among other

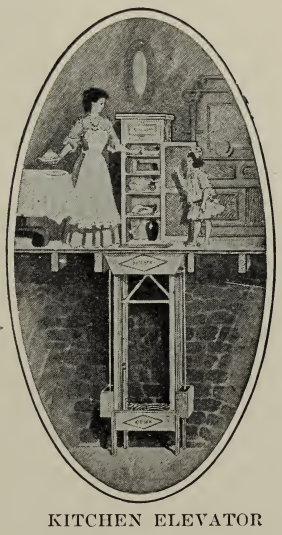
things Mrs. Pattison used a dining table server, which we illustrate from a photograph furnished by her. The device consists of a round flat board or piece of glass, constructed so as to revolve upon a pivot placed on a heavy pedestal in the center of the table. It allows each person to serve himself in turn and does away with passing.

Another appliance used by Mrs. Pattison was an English tea cart or wheel tray. The Ohio Manufacturing Company sell such a wheel-tray made in oak with glass tray for $22.50, freight prepaid.

Answering the same purpose as the wheel tray illustrated, for which the price is $10.00 delivered, we also show a home-made wheel tray, the photograph of which was sent in by a member of the school.

KITCHEN ELEVATORS

Dumb waiters have been used for a generation, formerly perhaps more than now. An improved kitchen elevator is made by the Imperial Manufacturing Company. To be useful for food storage, the elevator must run into the cold room of the cellar. They are sometimes placed so that they come up in the dining room. The price of these elevators is $35.00, with freight charges extra. This company also makes a combination cupboard and ice chest, for which the price is $45.00, and a regular ice chest which sells for $60.00. All of these elevators are carefully counterbalanced, so that they move up or down very easily.



KITCHEN ELEVATOR

ODORLESS KITCHEN

Progressive architects are now drawing plans in which the gas stove is placed in a recess of the kitchen with part of the wall extending in the form of a hood over the stove,

which is ventilated through a good size flue. In all cases the kitchen should have a ventilator in the ceiling, which if connected to the chimney or a good sized flue of sheet iron, will help much in ventilating the kitchen. It will make a surprising difference in the temperature in hot weather. The portable hood for coal range or gas stove is made by the Sanitary-Homes Company. It has a telescoping front which may be closed down completely over the stove or range, thus carrying away nearly all of the odors and heat of cooking. The prices range from $19.00 to $26.00 or more.

A simpler hood for various gas stoves may be obtained for about $10.00.

SANITARY-HOMES CO. HOOD.

The walls of a kitchen thoroughly ventilated does not become soiled nearly so quickly as those of the kitchen without special ventilation. A method of treating painted kitchen walls to make cleaning easy is to coat them with a thin starch paste solution. This permits the walls being washed very easily with warm water and soap, as the starch dissolves and takes the grease and dirt with it. After cleaning the walls are again brushed over with starch paste. Those who have tried it know that a kitchen wall that has become badly soiled is very difficult to wash without harming the paint. In fact, it is hardly more expensive to have the painter take off the grease and repaint.

VACUUM CLEANERS

Since the first edition of this Bulletin was published, more and more vacuum cleaners have been put on the market and very many have been sold and are now used by housekeepers. From all the reports we have received and tests that we have made, it seems to us that the vacuum cleaner has come to stay and has proved a considerable help in lightening housekeeping. They would have been even more useful in the days of carpets than at the present time, when hardwood floors and rugs are so generally used. However,

"SWEEPER-VAC"

SUCCESS VACUUM CLEANER

even with rugs the vacuum cleaner saves time and effort, besides being very valuable from a sanitary standpoint.

With a vacuum cleaner the furniture does not have to be moved in cleaning a room, which saves some time. Then the dusting is lessened to a great extent. There should be no need of a typical "spring cleaning" if a vacuum cleaner is used. The vacuum cleaner, however, does not accomplish

everything—the broom, carpet sweeper and dust mop still find their uses in homes equipped with vacuum cleaners.

Even the cheapest hand vacuum cleaner will take out an astonishing amount of fine dirt from a rug or carpet cleaned thoroughly by other methods. It is unquestionable that the fine dirt which the vacuum cleaner takes out is better *out of the house,* for it is sure to be stirred up when the room is used and make the air always more or less dusty and in a measure unhealthful.

The first hand vacuum cleaners put on the market, which operated by an upright lever, required two persons to work them successfully. It is, of course, an advantage to have a cleaner that may be run by one person alone. The "Sweeper Vac" and "Success," illustrated here, are one-person cleaners. The "Sweeper Vac" is operated like a carpet sweeper. The revolving of the wheel at the bottom operates the bellows, which gives the suction. Naturally it runs a little harder and is somewhat heavier than a carpet sweeper, but it still is easy to run, and it takes out a surprising quantity of dirt from a rug or carpet which has been cleaned thoroughly with a broom. No one who has not actually tried the experiment and *seen* the dust collected would believe that as much dust and dirt could be obtained.

The price of this machine is $9.50 with the regular nozzle. The makers also have another nozzle for hardwood floors or Oriental rugs, which costs $1.50 extra. This machine cannot be used for cleaning walls, portieres, curtains and upholstery.

The "Success" hand vacuum cleaner represents a type of which there are several makes on the market. The suction is produced by pushing the whole machine forward over the carpet or rug, while the hand holding the bellows handle remains stationary. This type is perhaps a little more tiresome to work than the sweeper type of hand machine, but it gives somewhat more powerful suction. The price of the Success machine is $15.00.

An electrically operated vacuum cleaner is much to be preferred to any hand cleaner. There are three general types of electric vacuum cleaners, according to the method of producing the suction. These are the fan type, in which the partial vacuum is produced by a very rapidly revolving fan. The Vortex and the Invincibles are examples of this

type. Then there are those in which the suction is produced by a double-acting bellows like the "Santos" and the "Duntley." Finally there is the type using an air pump similar to a Root blower, of which the "Therman" and the "Federal" are examples.

The "Hoover" vacuum cleaner is a combination of a carpet sweeper and suction cleaner, as it has a brush which is revolved rapidly by the motor, thus doing quick and effective work.

EUREKA ELECTRIC VACUUM CLEANER
(Price $35.)

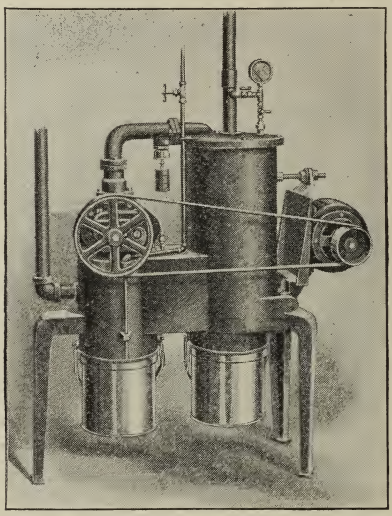
It is rather difficult to decide as to the relative advantages of the various makes. Other things being equal, a small and light machine is an advantage. This type is represented by the "Eureka," "Magic" and "Richmond." All these machines are operated by a rapidly revolving fan placed near the opening, so that there is little loss of effectiveness through friction.

We have tested the Eureka machine and find that it does thorough, quick and satisfactory work, particularly on rugs and carpets. These small machines have an attachment for cleaning hardwood floors, upholstery, curtains, etc., also for blowing, which is useful in cleaning radiators and other in-

accessible places, as well as for drying hair and the like. The price of the Eureka is $35.00 and the complete outfit of accessories cost $10.00 extra. It weighs 9 pounds.

Under ordinary conditions once a week is sufficient for a thorough use of the vacuum cleaner, so that in many cases clubs or church societies purchase vacuum cleaners and loan them by the day for 50 cents or more. In other cases four or five neighboring families combine and purchase a vacuum cleaner and apportion one day a week for its use to each family.

The ideal arrangement for vacuum cleaning is to have a

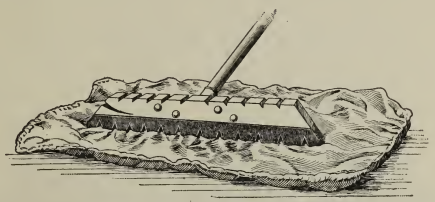


STATIONARY VACUUM CLEANER
Made by American Radiator Co.

stationary machine in the cellar with pipes leading to the various rooms. Nearly all of these are automatic in action, so that opening the cock in any room starts the machine, while closing the valve stops it. The machine illustrated is excellently designed, is easily cared for and not liable to get out of order. The price is $300.00 for the smallest machine, and it costs $35.00 to $50.00 more to put in the necessary pipes, valves and electric connections for an ordinary installation.

THE DUSTLESS DUSTER

We can all afford the Howard Dustless Dust Cloth. Price, a yard square, 25 cents postpaid. It is simply a good grade of cheese cloth which has been treated with some substance which holds the dust. We suspect that the oil treatment is similar to that used in dyeing Turkey red on cotton. At any rate, the oily substance is fixed on the fiber



OLIVER HOUSE CLEANER

so that the dust cloth may be washed in soap and water after being used and still holds its dust-retaining properties. The cloth is not "greasy" but gives a good polish to woodwork, glass, etc. It may be used to advantage over a broom in sweeping walls and hardwood floors.

The regular dustless broom-cloth for cleaning walls and ceilings costs 35 cents postpaid. The broom should be first covered with ordinary cloth to prevent the bristles wearing out the duster. The dustless dust-mop is very useful in caring for hardwood floors. The price of the large mop impregnated with the dust retaining substance is $1.00, and the special mop handle 25 cents, though an ordinary mop handle with a clamp will serve.

White Mop Wringer

THE OLIVER SANITARY HOUSE CLEANER

The Oliver Sanitary House Cleaner is intended to do away with scrubbing of floors on hands and knees. It consists of a long light ash handle to which is attached a crosshead fitted along the lower edge with a row of rubber teeth. The teeth cling to the cloth and press it against the surface to be cleaned just as

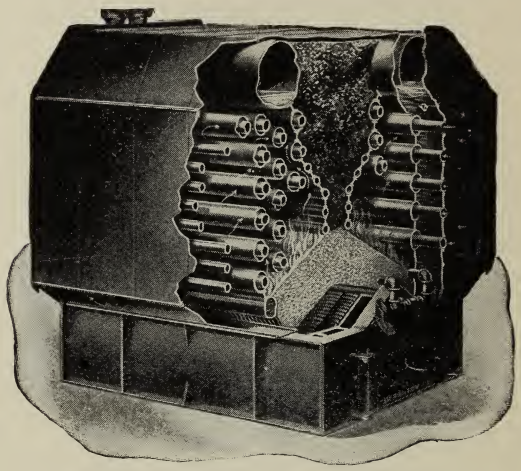
the fingers do. In addition to scrubbing and wiping, it is also useful for cleaning walls and dusting floors. It is very light but strong. The price is $1.00, express paid.

MOP WRINGERS

There are a number of mechanical mop wringers, some of which are attached to a pail and have rolls which wring the mop on turning the crank handle. Perhaps the White mop wringer is the best of its kind, as it wrings the mop simply by pressing the handle. The price is $1.50 up.

NEW HOUSE HEATING APPLIANCES

There have been a number of new heating appliances invented during the past few years. Prominently among them



SPENCER MAGAZINE-FEED STEAM HEATER

as a labor and money saver is the Spencer water-jacketed magazine-feed hot water or steam heater. This heater burns the smaller size of hard coal or semi-anthracite coal called buckwheat. This sells in the Chicago market for $4.50 or $5.00 per ton against $7.50 to $7.75 for the larger size of hard coal. The magazine holds a sufficient supply for twelve hours in cold weather or twenty-four hours in mild weather. It is impossible for the fire to go out while there is coal in the magazine. The Spencer heater by its arrangement of tubes and heating surfaces gives a very

high efficiency whatever coal is used. The water in the heater surrounds the coal magazine so there is no danger of its burning out or distilling the gases from the coal. It is sometimes possible to arrange for a high bin, in which case the coal can be run directly into the magazine through a shoot without shoveling.

Steam heating is once more being advocated by the makers of the so-called "modulated steam" heating systems. The patents consist of a valve easily set to admit a given quantity of steam and a water and air valve which completely drains the system and prevents the pounding which is so disagreeable in ordinary steam heating. The manufacturers charge so much for their patents that modulated steam systems cost about as much as hot water systems, while an ordinary steam heating system costs about 25 per cent less than a hot water system.

The American Radiator Company offers a vacuum system of steam heating. Special valves are used which let out the air but prevent its return. After the system is once full of steam, condensation produces a partial vacuum and the water in the boiler continues to boil much below the ordinary boiling temperature, 212° F. This arrangement makes it easier to heat the house to desired temperature in mild weather.

There are a number of pressure hot water systems. In these a column of mercury is introduced, which permits the temperature of the water to be raised above the usual boiling point without boiling. When the water is at high temperature the circulation is more rapid, so that in this system smaller pipes are used, which lessens the cost of piping and lessens the quantity of water in the system. This the manufacturer claims to be a great advantage, as there is a less volume of water to heat, so that the heat may be raised more quickly when desired. It costs slightly less to install a pressure hot water system.

There are a number of automatic temperature regulators on the market which by means of a thermostat in the various rooms controls the draft and fire and so the temperature. This, the manufacturers claim, reduces the quantity of fuel used and gives greater comfort in the house.

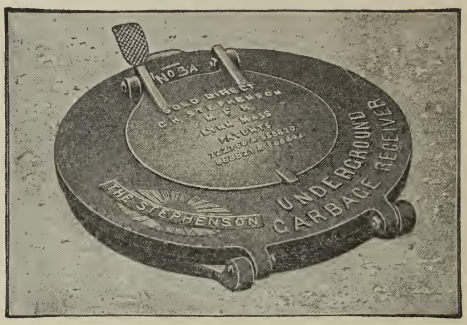
We notice a device on the market for turning on the draft of heater or furnace early in the morning which sells

for $5.00. It is controlled by an alarm clock. Anyone with a little ingenuity can construct a home-made device to give similar service.

GARBAGE DISPOSAL

Probably not one-third of those who receive this Bulletin have the advantage of any adequate municipal garbage removal service. Various methods for the sanitary disposal of garbage are given in *Household Hygiene.*

Among the newer appliances for garbage disposal is "The



STEPHENSON UNDERGROUND GARBAGE RECEIVER

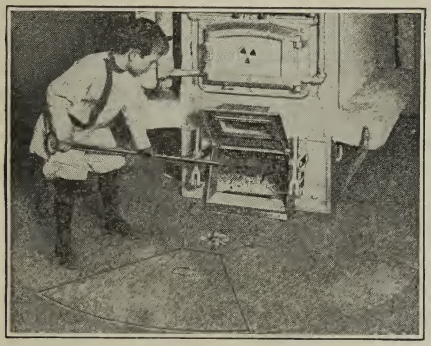
Incinerite," which is a small iron stove containing various grates and gas burners. It is intended to be placed in the kitchen and connected with the kitchen chimney flue. All the kitchen garbage is placed directly in the Incinerite and a small gas flame slowly drys out the contents. Occasionally the full supply of gas is turned on and everything is consumed at high temperature without producing disagreeable odors. Unfortunately, the Incinerite is priced at from $85.00 to $125.00, which seems too high.

One of the advantages of the coal range is that much of the garbage can be placed under the lid next to the fire, where it will gradually dry out and burn, leaving little ash.

For burning papers and light refuse there is nothing better than the refuse burners made of heavy wire mesh. They are cylindrical in shape and have a wire cover and wire bottom raised a few inches above the ground. This makes the combustion complete, and the papers and light

refuse are confined so that the partially burnt papers, etc., do not blow all over the premises. These refuse burners will dispose of a small amount of fairly dry garbage. Tin cans can be put in with the paper and while, unfortunately, they are not consumed, the labels, tin and solder are burned off, so that the cans can easily be flattened, or if they are buried in the earth they rust very quickly.

The remaining garbage if not fed to chickens or hogs may be buried in the earth, which soon decomposes if not buried too deeply.



SHARP ROTARY ASH RECEIVER

For the collection of garbage the Stephenson Underground Garbage Receiver is much to be preferred to any ordinary garbage can, which is an unsanitary nuisance and unsightly. This appliance consists of a cast-iron receptacle which receives the garbage can, a hinged cover so that the pail may be removed, and another hinged cover opened by the foot through which the garbage from the kitchen is dumped. A hole is dug in the earth near the kitchen door and the whole affair sunk to the level of the ground. The same arrangement may be used for ashes. The prices range from $12.75 to $21.00, according to size, with freight charges extra from Lynn, Mass.

Another admirable appliance for receiving ashes is the Sharp Rotary Ash Receiver, which is placed in the cellar floor, in part under the ash pit of heater. This apparatus contains either eight or twelve good sized ash cans arranged in a circle, and it is so constructed that as the cans become

full the apparatus is rotated so that an empty can comes under the heater. There is a hole or grill in the floor of the ash pit through which the ashes are very easily pushed into receivers, thus eliminating all the dust from shoveling ashes.

The eight-can receiver will take about three months' production of ashes in the ordinary household, and the twelve-can about four months, so that the ashes need be removed only about twice a season.

THE TUNGSTEN LAMP

A recent development in electric lighting is an incandescent lamp having a filament of the oxides of tungsten, in place of the usual carbon filament. They give much more light for the current used; a 32-candle power Tungsten lamp requires 40 watts per hour, while at 16-candle power old style lamp takes 55 watts. A 20-candle power Tungsten lamp uses 25 watts. They can be used best when the lights are turned on by a wall switch, for the filament is easily broken. These lamps cost extra, but if not broken save their cost many times. They have about the same "life" as a carbon filament lamp—1,000 lighting hours.

With these high power lamps it is customary to use globes of "Holophane" glass. These are prism shades and distribute the light where it is wanted.

MISCELLANEOUS

Many household appliances have not been mentioned, especially small devices for the kitchen. See *Household Management,* pages 105 and 195, *Principles of Cooking,* page 161, and *Lessons in Cooking,* page 253. Kitchen cabinets are too common to need more than a passing mention. They are especially useful in a large, poorly arranged kitchen. In prices they range from $10.00 to $40.00.

We have had several inquiries for pastry bags used in cake decorating, for potato, mayonnaise, etc. These consist of a rubber bag with nozzles having various shaped openings. A set of twelve and the rubber bag costs $1.50; the bag alone 60 cents and the tubes 10 to 15 cents each. Timbale irons cost about $1.00 each, and rosette irons 50 cents for a set of two.

Further details in regard to Household Appliances will be sent on request to members of the School, or to others if stamps are enclosed. If not obtainable locally, appliances may be obtained through the Purchasing Department of the School.